

**A NEW SPECIES OF *NADLERIA*  
(PSOCOPTERA: LACHESILLIDAE)  
FROM THE TAMBOPATA RESERVED ZONE,  
MADRE DE DIOS, PERU<sup>1</sup>**

Alfonso Neri García Aldrete<sup>2</sup>

ABSTRACT: A new species of *Nadleria* from the western edge of the Amazon Basin, in south-eastern Peru, is here described. It is close to *N. mockfordi* and it is the second species of the genus known from both sexes; the male of the new species can be separated from the male of *N. gamma* on details of terminalia, particularly of the epiprocto, clunium and phallosome. The types are deposited in the Smithsonian Institution, Washington, D.C.

RESUMEN: Se describe aquí una nueva especie de *Nadleria* de la Zona Reservada de Tambopata, en la Amazonia Peruana. La nueva especie es cercana a *N. mockfordi* y es la segunda especie del género de la que se conocen los dos sexos; el macho de la nueva especie puede separarse del macho de *N. gamma* en detalles genitales, particularmente del epiprocto, clunio y falosoma. Los tipos de la nueva especie están depositados en el Smithsonian Institution, de Washington, D.C., U.S.A.

The three known species of the psocid genus *Nadleria* (*N. alpha* Badonnel and García Aldrete, *N. mockfordi* Badonnel and García Aldrete, and *N. gamma* Mockford), are virtually restricted to the Amazon Basin; only the former occurs outside of this area, in Trinidad (Badonnel and García Aldrete, 1979, 1980; Mockford, 1985). The purpose of this paper is to describe an additional species of *Nadleria* from the southwestern edge of the Amazon Basin, in the Tambopata Reserved Zone, Perú. The specimens studied were collected by the team that conducted the Smithsonian Institution Canopy Fogging Project headed by Dr. Terry L. Erwin. For details of the collecting technique and about the area see Erwin, 1983, 1984, and 1989. The specimens for microscopic study were dissected in 80% alcohol and the head, right wings and legs, and terminalia were permanently mounted, either in Euparal or in Balsam of Canada. The measurements are in microns and were taken with a filar micrometer whose measuring unit was 1.36 microns for wings and 0.53 microns for other parts. The following abbreviations are used for parts measured: FW: fore wing length; HW: hind wing length; F, T, t1, t2: length of femur, tibia and tarsomeres of right hind leg; ctt1: number of ctenidia on t1; P4: length of fourth maxillary palpomere; fl...fn: length of antennal flagellomeres; IO:

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<sup>2</sup> Instituto de Biología, UNAM., Departamento de Zoología, Apartado Postal 70 - 153, 04510, México, D.F. MEXICO.

minimum distance between compound eyes; D: antero-posterior diameter of compound eye; d: transverse diameter of compound eye;  $PO = d/D$  (I0, D and d, measured in frontal view of head mounted on slide.). Other abbreviations: M= male, F= female. The types of the species here described will be deposited in the Smithsonian Institution Collection, Washington, D.C.

*Nadleria mariateresae* García Aldrete, NEW SPECIES

Figs. 1 - 9

**FEMALE.** Color (in 80% alcohol). Body reddish brown. Compound eyes black, ocelli clear, with well developed, ochre centripetal crescents. Antennae and legs pale brown, areas next to dorsal articulations of coxae reddish brown, much more pigmented than rest of the leg. Fore wings with large, cloudy brown area covering proximal half of the wing; hind wings hyaline, with slight brown wash along anterior wing margin, from wing base to end of vein R1, fading posteriorly. Abdomen pale brown, with small, transverse sclerites on segments 2-7.

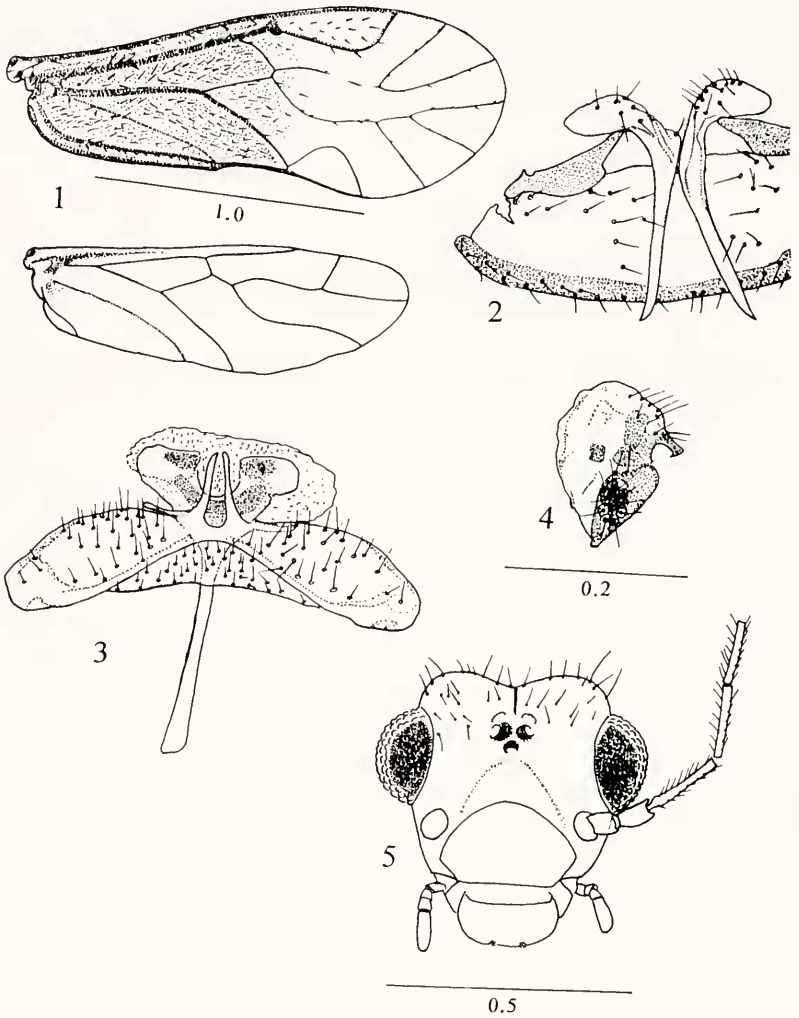
**Morphology.** Vertex of head extended above compound eyes, impressed in the middle; ocelli close together. Fore wing with extensive ciliation in the membrane of the pigmented proximal half; veins ciliated, except along Cu2. Hind wing lacking ciliation. Hind tibiae with row of ctenidobothria along median margin reaching distal end; these ctenidobothria not perpendicular to longitudinal axis of tibia. Subgenital plate (Fig. 9), wide, setose, with median lobe slightly projected posteriorly; pigmented area deeply cleft anteriorly, without macrosetae, and with a small, slender, hyaline area in apex of median lobe. Gonapophyses (Fig. 6) slender at base, each with a large pre-apical bulge, ending in a small conical apophysis. Ninth sternum (Fig. 6) with a large, distinct, pigmented transverse area as illustrated. Paraprocts (Fig. 7) elongate, semi-elliptical; sensoria with 11 - 12 trichobothria, one, on outer edge, without basal rosette; setae and pigmented area as illustrated. Epiproct (Fig. 8) straight anteriorly, rounded posteriorly, with setal field towards posterior margin, 4 setae much longer than the others, disposed as illustrated.

**Measurements.** FW: 1743; HW: 1343; F: 355; T: 629; t1: 199; t2: 106; ctt1: 14; P4: 87; fl: 155; f2: 128; f3: 112; f4: 92; f5: 58; f6: 60; I0: 337; D: 192; d: 93; I0/D: 1.75; PO: 0.48

**MALE.** Color (in 80% alcohol). Same as the female.

**Morphology.** Vertex of head more deeply impressed than that of the female. Hypandrium (Fig. 3) small, triangular, with claspers fused to its sides, each clasper terminating in a straight, finger like projection. Phallosome apodemes fused to form a straight baculum that divides distally, each arm terminating in a pigmented membranous area, these connected by a pigmented U-shaped arch. Clunium (Fig. 2) limited anteriorly by a pigmented area on each side of epiproct, to which each paraproct is articulated. Paraprocts (Fig. 4) with sclerotized, aquiline prong on median margin; areas next to prong and surrounding sensorium strongly sclerotized, a mesal pigmented spot next pigmented areas of prong and sensorium, this with 12 trichobothria, one, on outer edge, without basal rosette. Epiproct (Fig. 2) with two stout, long, acuminate processes, (one shorter than the other in one specimen).

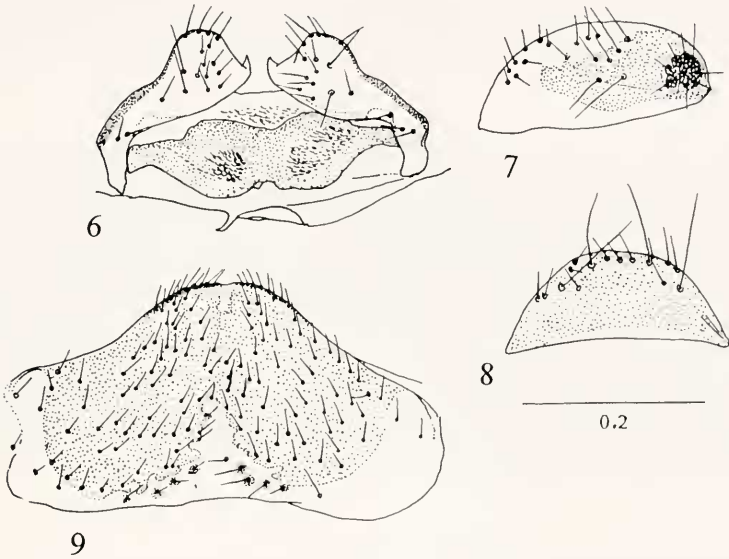
**Measurements.** FW: 1839; HW: 1388; F: 362; T: 642; t1: 204; t2: 96; ctt1: 15; P4: 91; f1: 181; f2: 143; f3: 123; f4: 94; I0: 332; D: 208; d: 92; I0/D: 1.59; PO: 0.44



Figures 1-5. *Nadleria mariateresae* n. sp. Male. Fig. 1. Fore and hind wings. Fig. 2. Clunium and epiproct. Fig. 3. Hypandrium and phallic apodemes. Fig. 4. Right paraproct. Fig. 5. Frontal view of head. Scales in mm. Figs. 2 and 3 to scale of Fig. 4

**TYPE MATERIAL.** PERU. Madre de Dios. Río Tambopata Reserved Zone. 30km (air) SW Puerto Maldonado, 290m, 12°50' S: 69° 20' W. 6.IX.1984, holotype M. allotype F, 1 paratype M. 12.XI.1983, 1 paratype M. 25.II. 1984, 1 paratype F. 7.V.1984, 3 paratypes F. T.L. Erwin *et al.* collectors; Smithsonian Institution Canopy Fogging Project. Types deposited in the Smithsonian Institution Collection, Washington, D.C.

The species here described is dedicated to my wife María Teresa, who, in many ways, has contributed to my work.



Figures 6-9. *Nadleria mariateresae* n. sp. Female. Fig. 6. Gonapophyses and ninth sternum. Fig. 7. Right paraproct. Fig. 8. Epiproct. Fig. 9. Subgenital plate. Scale in mm. All figures to the same scale.

With the above description, Mockford's key to the species of *Nadleria* (Mockford, 1985) is modified as follows:

#### Key to the species of *Nadleria* (Females)

1. Posterior margin of subgenital plate decidedly protruding posteriorly as a rounded lobe; third valvula with apex projecting as a short process beyond a broad lateral bulge . . . . . 2
- 1'. Posterior margin of subgenital plate at least slightly depressed between slightly developed lateral lobes, third valvula with a broad, rounded or somewhat tapering apex, lacking a lateral bulge . . . . . 3

2. Rounded lobe of subgenital plate narrow, strongly projected posteriorly; several macrosetae on field of pigmented area of subgenital plate; pigmented area on ninth sternum, between third valvulae, with two sclerotized bands on anterior edge, one to each side of longitudinal midline . . . . . *N. mockfordi* Badonnel and García Aldrete
- 2'. Rounded lobe of subgenital plate broad, slightly projected posteriorly; macrosetae on field of pigmented area of subgenital plate not apparent; pigmented area on ninth sternum, between third valvulae, biconcave in the middle, without anterior, sclerotized bands . . . . . *N. mariateresae* n. sp.
3. Subgenital plate only slightly depressed on posterior margin between lateral lobes; third valvula evenly rounded on median margin . . . . . *N. alpha* Badonnel and García Aldrete
- 3'. Subgenital plate decidedly depressed on posterior margin between lateral lobes; third valvula decidedly bulging on median margin near apex . . . . . *N. gamma* Mockford

## DISCUSSION

On female characters, *N. mariateresae* n. sp. is closer to *N. mockfordi* Badonnel and García Aldrete than to the other two species in the genus; they have in common projected subgenital plates, paraprocts similarly pigmented, and gonapophyses bulging, with apices projecting into short, conical processes. I would predict the structural characters of the male of the latter species to be similar to the male of *N. mariateresae*. This and the male of *N. gamma* can be clearly separated on details of terminalia: in the latter, the phallic apodemes widely diverge posteriorly and the epiproct has a single, short, truncate process. The male terminalia of *N. mariateresae* is strikingly similar to the male terminalia of *Lachesilla* species in the *pedicularia* group, occurring in South America, as discussed by Mockford (1985).

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